

Claims

1. Polyester yarn which is characterized in that it is a multifilament yarn substantially comprising polytrimethylene terephthalate, and as well as the strength from the stress-strain curve being at least 3 cN/dtex and the Young's modulus being no more than 25 cN/dtex, the minimum value of the differential Young's modulus at 3-10% extension is no more than 10 cN/dtex and the elastic recovery following 10% elongation is at least 90%.
2. Polyester yarn according to Claim 1 which is characterized in that the Young's modulus is no more than 22 cN/dtex.
3. Polyester yarn according to Claim 1 which is characterized in that the minimum value of the differential Young's modulus at 3-10% extension is no more than 5 cN/dtex.
4. Polyester yarn according to Claim 1 which is characterized in that the residual extension is at least 45%.
5. Polyester yarn according to Claim 1 which is characterized in that the elastic recovery following 10% elongation is at least 95%.
6. Polyester yarn according to Claim 1 which is characterized in that the degree of crystallinity is at least 30%.

7. Polyester yarn according to Claim 1 which is characterized in that the boiling water shrinkage is 3-15% and, furthermore, the maximum value of the shrinkage stress is no more than 0.3 cN/dtex and the temperature at which the maximum value of shrinkage stress is shown is at least 120°C.

8. Polyester yarn according to Claim 7 which is characterized in that the maximum value of the shrinkage stress is 0.15 to 0.25 cN/dtex.

9. Polyester yarn according to Claim 7 which is characterized in that the temperature at which the maximum value of shrinkage stress is shown is at least 130°C.

10. Polyester yarn according to Claim 1 which is characterized in that the CV value of the continuous shrinkage in the yarn lengthwise direction is no more than 5%.

11. Polyester yarn according to Claim 1 which is characterized in that the CF value is 1-30.

12. Polyester yarn according to Claim 11 which is characterized in that the CF value is 5-25.

13. Polyester yarn according to Claim 1 where the fineness of the individual filaments from which the polyester yarn is composed is no more than 3 dtex.

14. A woven fabric which is characterized in that polyester yarn according to any of Claims 1 to 13 is

used as the warp yarn and/or the weft yarn in the form of a twisted yarn of twist coefficient 10,000 to 20,000.

15. A method of producing polyester yarn which is characterized in that multifilament yarn obtained by the melt spinning of polymer substantially comprising polytrimethylene terephthalate of intrinsic viscosity $[\eta]$ at least 0.7 is hauled-off at a spinning rate of at least 2000 m/min and, without winding up, subjected to drawing and heat-treatment, after which it is continuously subjected to a relaxation heat treatment at a relaxation factor of 6 to 20% and wound up as a package.

16. A method of producing polyester yarn according to Claim 15 which is characterized in that there is carried out the melt spinning of polytrimethylene terephthalate of intrinsic viscosity $[\eta]$ at least 0.8.

17. A method of producing polyester yarn according to Claim 15 which is characterized in that the spinning is carried out at a temperature 20-50°C higher than the melting point of the polytrimethylene terephthalate.

18. A method of producing polyester yarn according to Claim 15 which is characterized in that it is hauled-off at a spinning rate of at least 3,000 m/min.

19. A method of producing polyester yarn according to Claim 15 which is characterized in that the relaxation heat treatment is carried out at a relaxation factor of 8 to 18%.

Sub 10
20. A method of producing polyester yarn according to Claim 22 which is characterized in that there is used a textured roll of surface roughness 1.5S-8S in the drawing and heat-treatment.

21. A method of producing polyester yarn according to Claim 15 which is characterized in that there is used a textured roll of surface roughness 3.2S-6.3S in the drawing and heat-treatment.

22. A method of producing polyester yarn according to Claim 15 which is characterized in that the drawing temperature is 10-50°C higher than the glass transition temperature of polytrimethylene terephthalate.

23. A method of producing polyester yarn according to Claim 15 which is characterized in that the heat setting and relaxation heat treatment are carried out at a temperature in the range 105-180°C.